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## Conducting empirical research in virtual worlds

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## Conducting empirical research in virtual worlds



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Publications:

<http://oro.open.ac.uk/view/person/sm577.html>

## Research being conducted in virtual worlds



1. as a platform for interacting with participants on real-life research problems
  - similar to using Skype, phone for interviews, surveys
  - recruiting for real world projects
  - collecting requirements for real world projects
2. to study the experiences in virtual worlds to draw inferences about their real world behaviour
  - consumer behaviour: brands, advertising, e-commerce
  - replicas of buildings and spaces
  - social science experiments, studying crowd behaviour

## Research being conducted in virtual worlds



3. to study about the virtual world behaviours in order to understand user expectations in the real-world
  - consumer behaviour in virtual worlds and their expectations from 2D e-commerce
4. to study inworld initiatives
  - student experience with learning resources
  - design of learning spaces; designing for navigation and wayfinding

## Research being conducted in virtual worlds



5. inworld phenomena
  - inworld communities
6. effects on 'self' or about 'self'
  - gaining skills, e.g. communication, leadership
  - studies on 'identity'
7. effects of variables in the research design
  - obese interviewer-avatar vs. a thin avatar
  - virtual space design (formal vs. informal)

## Our projects



- in two domains: education (3) and e-commerce (1)
- researcher's toolbox and resources
  - data collection and analysis techniques
  - ethical considerations
  - the research process
  - paper in Journal of virtual worlds research, 2010  
<http://oro.open.ac.uk/25134/>

## Team working in a Computing course

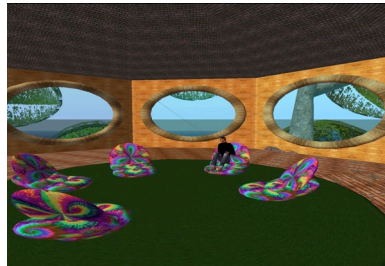


introductions, training and tours



one-to-one meetings with tutors

## Examples of meeting locations



focus group



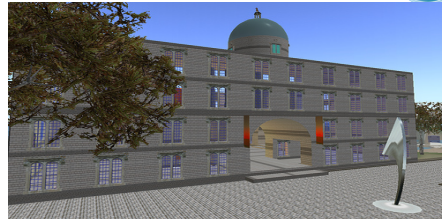
interview



## Levels of visual realism in a learning space



Photo-realism



Artistic realism



Metaphorical realism



Abstract + functional realism (hybrid)



group discussion  
aided by images



interviews

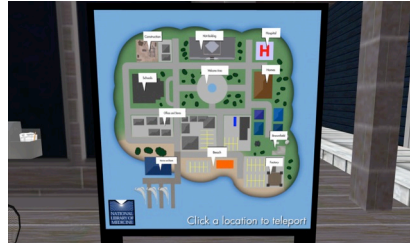




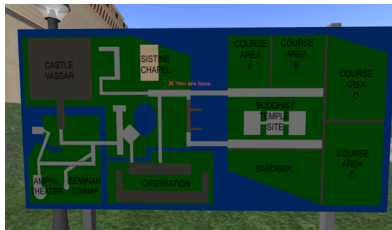
## Designing for navigation and wayfinding



directional signs at intersections



teleport instructions



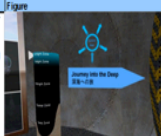
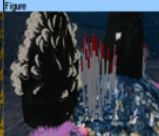




labels embedded within maps and a 'You are here' to help orient the user



path legibility

## An excerpt from the heuristics

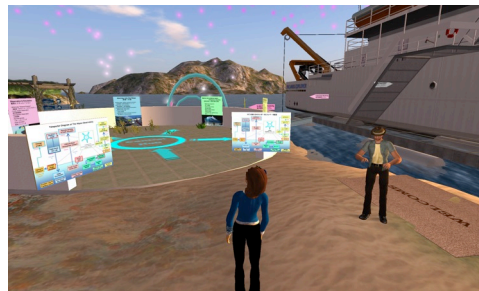


| Heuristic   | Rationale for inclusion  | Example  | Figure   | Figure  |
|---|--|--|--|---|
| When faced with making a navigational decision, does the user have the information appropriate for making a decision? | Having navigational information enables a user to make the correct decisions.  | In The Abyss Observatory, clear directional signs are given for a user following the Journey into the Deep tour (left Figure).<br><br>When trying to locate the library in deepthink on foot, a user is forced to make a decision at an intersection (right Figure). However, an informed decision as to which direction to go cannot be made so the user may resort to guessing. The decision would be straightforward if further information was made available, such as directional signs or a map of the library island.                       |  |  |
| Can a user view the island's structure?   | Being able to visualise the structure of an island is an important navigational aid, particularly when a user is using methods other than teleporting, such as walking or flying.                        | The map in Outpost shows a detailed structure of the island (left Figure) and is useful in providing a user with an overview of the island.<br><br>In contrast, the teleport maps in deepthink do not show a user any of the paths in the island or any of the bridges between the various regions of the island (right Figure).   |  |  |
| Have maps been placed such that they are easy to find?  | A user may rely on maps for orientation and find them a useful aid to navigating a learning space. They are even more useful if a user can use them to teleport to different locations within an island. | The teleport map of Virtual Ability Island is positioned close to the entry point and is very easy to notice (left Figure).<br><br>When a user is in the deepthink library a map is not obvious because it is a long way off, near the Beach Bar area. From the Beach Bar area of the island the view of the teleport map is obscured by plant life (right Figure). If a user cannot easily locate map they will need to resort to some other navigational aid such as a Second Life landmark or adopt another wayfinding strategy such as flying. |  |  |



guideline/  
heuristic  
walkthroughs

tour and  
interview



user  
observations

retrospective  
protocol





## E-commerce in virtual worlds



phenomenological  
interviews



semi-structured  
interviews and  
laddering interviews



## Techniques that we have employed for data analysis



- descriptive phenomenology for narrative accounts
- thematic or inductive analysis

*Thomas, D.R. (2006). A General Inductive Approach for Analyzing Qualitative Evaluation Data, American Journal of Evaluation, vol. 27, no. 2, pp. 237-246.*

- using frameworks such as definitions of concepts, e.g. usability and its constituents, efficiency, effectiveness and satisfaction
- recording (counting) the options that the participants suggested

## Ethical considerations



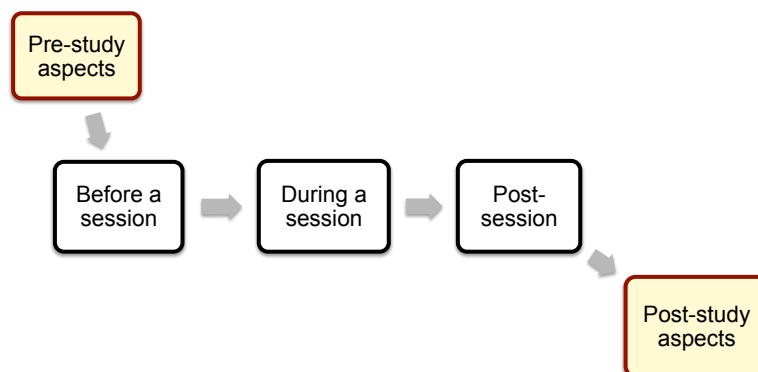
- the consent process
  - project summary sheet
  - consent form
  - contact details of the project leader including real-world information
- data collection and storage
- retaining anonymity
- approval of the research by the University's ethics committee
- Second Life images

## Challenges



- international nature of the online medium
- anonymity of the medium demands greater investment of time to establish a mutually beneficial trust relationship
- the research process in a virtual world is influenced by etiquette and ethical guidelines of conducting research in
  - real-world (offline) and online
- a virtual world researcher requires the skills and training of conducting both offline and online research

## The Research Process



Tutorial at VWBPE conference, 2011:

<http://oro.open.ac.uk/29282/>

## Preparations for in-world interactions

Pre-study  
aspects



- developing communication and other inworld skills
- creating a researcher's identity
- participating in the community
  - learning about the inworld etiquette, norms

## Research design

Pre-study  
aspects



- strategies for recruitment of participants
- pre-study information from participants
  - do you need to know their real-life identities?
  - do you need their real-life demographic information?
- ethical implications

## Data and handling

Pre-study  
aspects



- Components of the data?
  - transcript, audio-recording, pre-interview questionnaire, images
- For how long do you require the data?
- Does the analysed data require validation by the participant?
- Are you expecting any follow-ups with the participants?

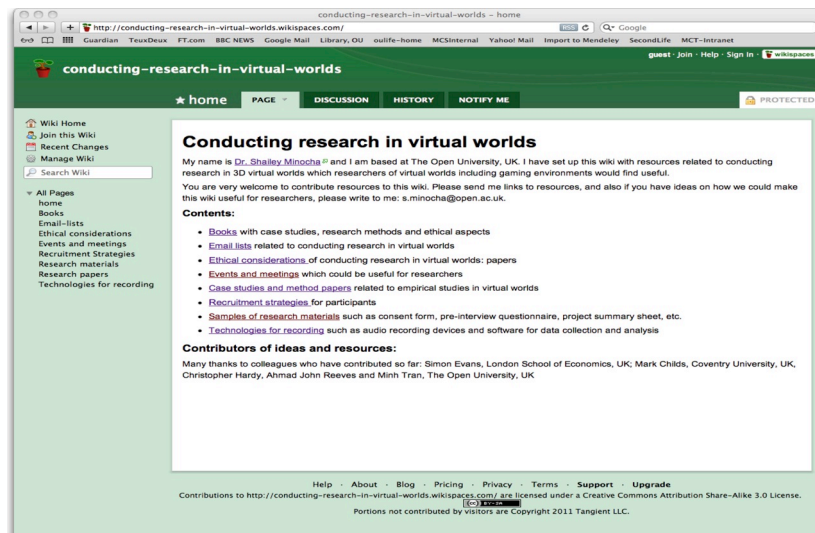
## Virtual does not mean “not real”



- emotional attachment to the avatar
- protecting privacy of the persons and avatars through anonymisation
- risks:
  - emotional and financial damage
  - disruption of the community
  - loss of access, reputation, researcher credibility
- strive for transparency by identifying yourself as a researcher



## Wiki with resources



<http://conducting-research-in-virtual-worlds.wikispaces.com/>

## Some key messages

*"Any avatar is subjectively a second self, so its reputation becomes important to the owner even if its deeds cannot be traced back to the person in the real world.*

*"The internet or the virtual world does not inherently transform the accepted protocols.*

*The technology connects people to people via a network, and therefore we must be sensitive to the rights of the participants behind the connections"*

## Toolkit for researchers: would be useful



- scripts for surveys
- survey bots
- possibility of recording real-time user behaviour
  - tracking object interaction, avatar location and avatar behaviour
  - ethical considerations; how it would affect behaviour
- payment scripts for awarding incentives in Linden dollars after completion of a research study